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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,376	03/10/2004	Christoph Richter	2002P15599US	4466

7590 05/12/2008  
SIEMENS CORPORATION  
INTELLECTUAL PROPERTY DEPT.  
170 WOOD AVENUE SOUTH  
ISELIN, NJ 08830

EXAMINER
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EASTMAN, AARON ROBERT

ART UNIT	PAPER NUMBER
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4147

MAIL DATE	DELIVERY MODE
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05/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/797,376	<b>Applicant(s)</b> RICHTER ET AL.	
	<b>Examiner</b> AARON R. EASTMAN	<b>Art Unit</b> 4147	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

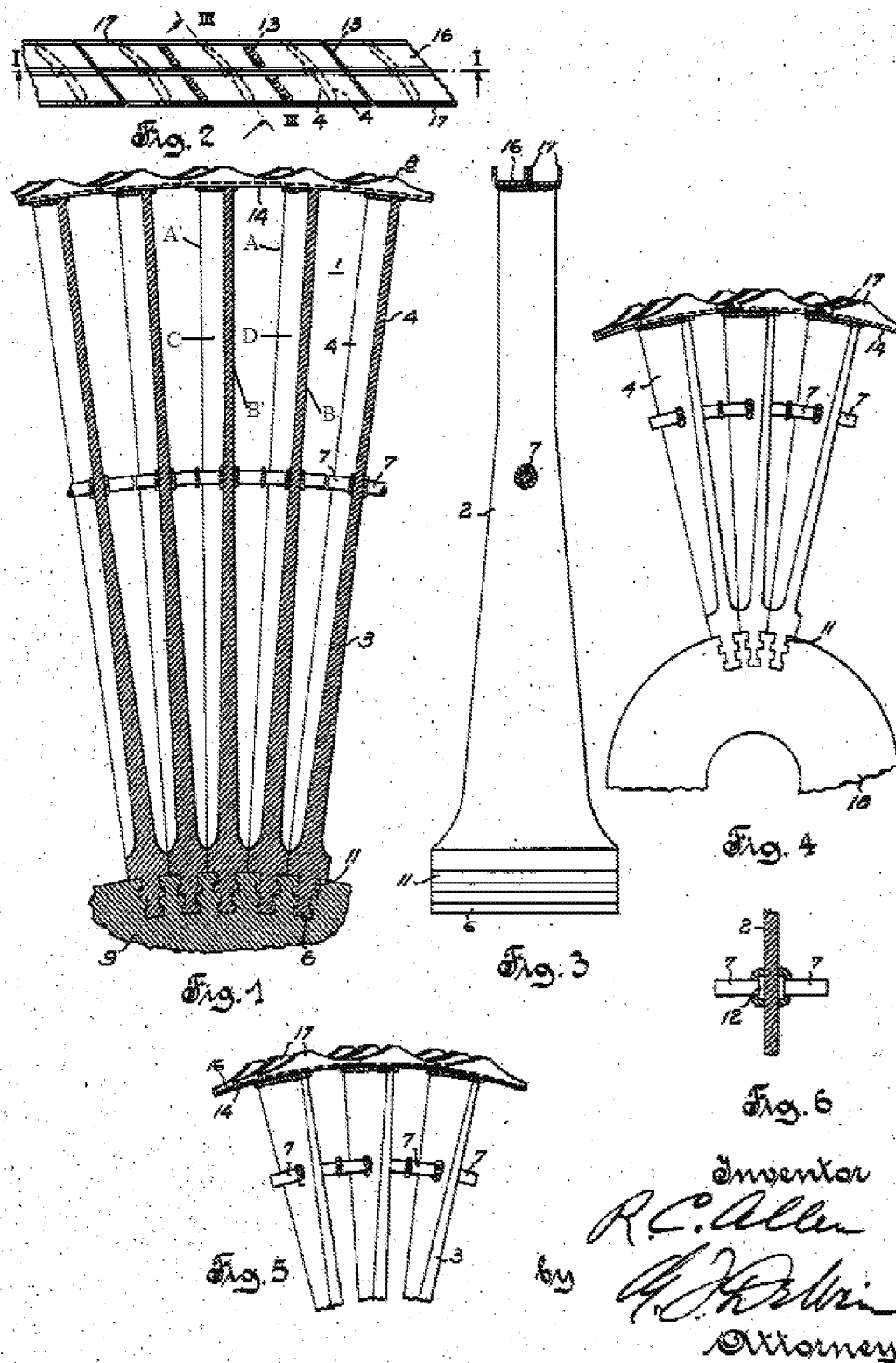
**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

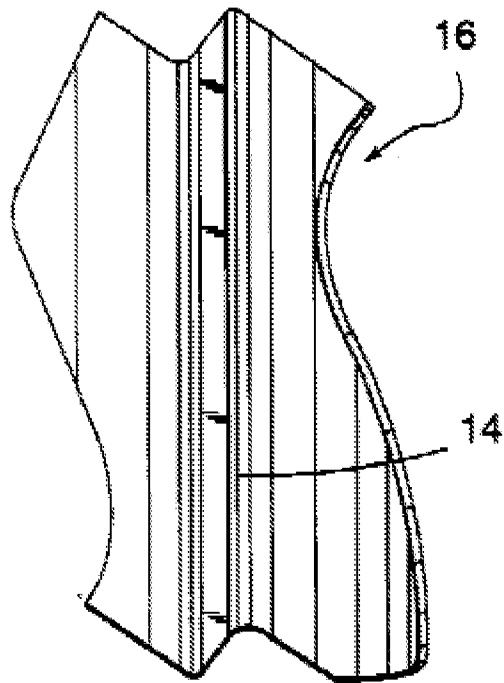
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 5-11, 13, 15, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 2,278,040 (Allen hereinafter) in view of US Patent Number 6,241,471 (Herron hereinafter).



Figures 1-6 of US Patent Number 2,278,040 (Allen hereinafter)

**Fig. 5**  
**(Prior Art)**



**Figure 7 of US Patent Number 6,241,471 (Herron hereinafter)**

3. In re claim 1, Allen discloses:

A blade row of a turbo-machine, comprising:

a blade (2) having a root (6), a center region, a tip, a leading edge and a trailing edge, the blades arranged circumferentially adjacent to each other to form a row;

a shroud plate (8) arranged at each blade tip, the shroud plate (8) adapted to inhibit untwisting of the blades (2); and

a support element (7) arranged between adjacent blades (2) located approximately in the blade center region and coupling the adjacent blades (2).

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4. Allen does not disclose the shroud plates further including a saw-tooth-shaped contact region such that adjacent shroud plates are attached one inside the other thereby restricting blade movement about a center axis of rotation.

5. Herron teaches shroud plates (16) including a saw-tooth-shaped contact region such that adjacent shroud plates (16) are attached one inside the other thereby restricting blade movement about a center axis of rotation (col.1 lines 35-39).

6. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine shroud plates (16 of Herron) including a saw-tooth-shaped contact region such that adjacent shroud plates (16 of Herron) are attached one inside the other thereby restricting blade movement about a center axis of rotation (col.1 lines 35-39 of Herron) as taught in Herron with the apparatus disclosed by Allen for the purposes of restricting blade movement.

7. In re claim 3, Allen discloses:

The blade row as claimed in claim 1, wherein the supporting element (7) is a pin (col. 3, lines 69-71).

8. In re claim 5, Allen discloses:

The blade row as claimed in claim 1, wherein the turbo-machine is a fluid flow machine (col. 1, line 44).

9. In re claim 6, the combination in re claim 1 discloses:

A rotating blade for use in a turbo-machine, comprising:

a first rotating blade (C of Allen) with a first leading edge (A' of Allen), a first trailing edge (B' of Allen), a first

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blade tip, a first blade root, a first blade center region, and a first blade shroud located near the first blade tip;

a second rotating blade (D of Allen) with a second leading edge (A of Allen), a second trailing edge (B of Allen), a second blade tip, a second blade root, a second blade center region, and a second blade shroud located near the second blade tip; and a support element (7 of Allen) located between the first rotating blade (C of Allen) and the second rotating blade (D of Allen) and arranged approximately in the blade center region, and adapted to couple the first rotating blade (C of Allen) to the second rotating blade (D of Allen),

wherein the first blade shroud (16 of Herron) and the second blade shroud are attached one inside the other via a saw-tooth-shaped contact region thereby restricting vibratory blade movement about a center of axis of rotation (col.1 lines 35-39 of Herron).

10. In re claim 7, Allen discloses:

The rotating blade as claimed in claim 6, wherein the first rotating blade (C) is located adjacent to the second rotating blade (D).

11. In re claim 8, Allen discloses:

The rotating blade as claimed in claim 6, wherein a plurality of first rotating blades (C) and second rotating blades (D) are arranged on a rotor (9) of the turbo-machine to form a row of rotating turbine blades.

12. In re claim 9, Allen discloses:

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The rotating blade as claimed in claim 6, wherein the first rotating blade shroud has a contact face (13) and the second rotating blade shroud has a contact face (13).

13. In re claim 10, Allen discloses:

The rotating blade as claimed in claim 9, wherein the first rotating blade shroud contact face (13) is arranged approximately opposite to the second rotating blade shroud contact face (13).

14. In re claim 11, Allen discloses:

The rotating blade as claimed in claim 10, wherein blade untwist is prevented by the first rotating blade shroud contact face (13) contacting the second rotating blade contact face (13) during operation.

15. In re claim 13, Allen discloses:

The rotating blade as claimed in claim 6, wherein the supporting element (7) a pin (col. 3, lines 69-71).

16. In re claim 15, the combination in re claim 1 discloses:

A method for reducing vibration in a rotating blade within a turbo-machine, comprising:  
assembling a first rotating blade (C of Allen) on a turbine rotor (9 of Allen);  
assembling a second rotating blade (D of Allen) on the turbine rotor (9 of Allen) so the first rotating blade (C of Allen) and second rotating blade (D of Allen) are adjacent;  
installing a support element (7 of Allen) between the first rotating blade (C of Allen) and the second rotating blade (D of Allen), the support element (7 of Allen) located approximately in the blade center region; and



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coupling the first rotating blade (C of Allen) to the second rotating blade (D of Allen);  
and

providing blade shrouds (16 of Herron) located on the tips of the blades, each blade shroud including a saw-tooth-shaped contact region such that adjacent blade shrouds are attached one inside the other thereby restricting blade movement about a center of axis of rotation

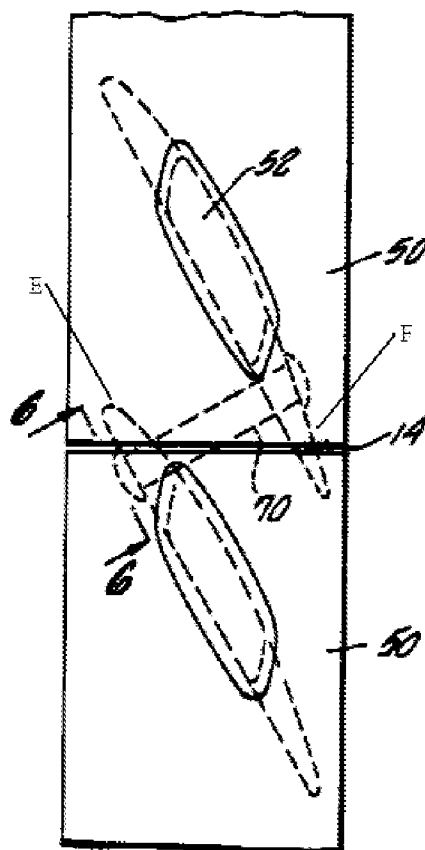
17. In re claim 16, Allen discloses:

The method as claimed in claim 15, wherein the support element (7) is a pin (col. 3, lines 69-71).

18. In re claim 18, Allen discloses:

The blade row as claimed in claim 1, wherein untwisting inhibition is provided by contact between the shroud plates of adjacent blades during operation.

19. Claims 2, 4, 12, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in view of Herron and in further view of US Patent Number 4,386,887 (Ortolano hereinafter).



*FIG. 5.*

**Figure 5 of Ortolano**

20. In re claim 2, Allen discloses all of the limitations except wherein the leading edge (E of Allen) of the blade is coupled to the trailing edge (F of Allen) of an adjacent blade by the supporting element (shown as 70 in Figure 5). However, Ortolano teaches this as seen in Figure 5 above.

21. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the location of the supporting element taught in

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Ortolano with the blade row disclosed by Allen for variations where the blade centers did not line up for convenient connection via the supporting element.

22. In re claim 12, Allen discloses all of the limitations except wherein the leading edge (E of Allen) of the first rotating blade is coupled to the trailing edge (F of Allen) of the second rotating blade by the supporting element (shown as 70 in Figure 5).

However, Ortolano teaches this as seen in Figure 5 above.

23. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the location of the supporting element taught in Ortolano with the rotating blade disclosed by Allen for variations where the blade centers did not line up for convenient connection via the supporting element.

24. In re claims 4, 14 and 17 Allen discloses all of the limitations except wherein the blades are formed from titanium or a titanium alloy. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the blades from titanium or a titanium alloy, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, USPQ 416.

### ***Response to Arguments***

25. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

### **Conclusion**

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent Number 6,241,471 discloses blade tip shrouds capable of preventing untwisting of adjacent blades.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON R. EASTMAN whose telephone number is (571)270-3132. The examiner can normally be reached on Mon-Fri 9:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Nguyen can be reached on 571-272-4491. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Aaron R. Eastman  
Examiner  
Art Unit 4147

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/George Nguyen/

Supervisory Patent Examiner, Art Unit 4147